

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-20 are pending in the present application. Claims 1, 2, 3, 5, and 6 are amended and Claims 8-15 are withdrawn by the present amendment.

In the outstanding Office Action, Claims 8-15 were withdrawn from further consideration; the specification was objected to; Claims 2-7, 17, 18, and 20 were rejected under 35 U.S.C. § 112, first paragraph; Claims 1, 16, and 19 were rejected under 35 U.S.C. § 102(e) as anticipated by Sakakima et al. (U.S. Patent No. 6,077,618, herein "Sakakima '618") or Abraham et al. (U.S. Patent No. 6,452,764 B1, herein "Abraham"); and Claims 2-7, 17, 18, and 20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sakakima et al. (U.S. Patent No. 5,715,121, herein "Sakakima '121").

A new Abstract has been added that is consistent with amended Claim 1. No new matter is believed to be added.

Regarding the objection to the specification, the specification has been amended as suggested in the outstanding Office Action without adding new matter. Accordingly, it is respectfully requested this objection be withdrawn.

Regarding the rejection of Claims 2-7, 17, 18, and 20 under 35 U.S.C. § 112, first paragraph, independent Claims 2 and 5 have been amended to more clearly recite "a single conductive part" and to omit "a second feed portion being connected to the first feed portion." The claim amendments find support in Figures 1-5. No new matter is believed to be added. Accordingly, it is respectfully submitted this rejection be withdrawn.

Claims 1, 16, and 19 were rejected under 35 U.S.C. § 102(e) as anticipated by Sakakima '618 or Abraham. That rejection is respectfully traversed.

Independent Claim 1 is amended to recite that a magnetoresistance effect element has “a single conductive part with a film area smaller than a film area of the magnetoresistance effect element and the magnetoresistance effect element is configured such that the sense current flows only through said single conductive part.” The claim amendments find support for example in Figures 1-5. No new matter is believed to be added.

Briefly recapitulating, independent Claim 1 is directed to a magnetoresistance effect element having a magnetization fixed layer, a magnetization free layer, and a non-magnetic intermediate layer formed between the magnetization fixed layer and the magnetization free layer. The film area of the non-magnetic intermediate layer is smaller than the film area of each of the magnetization fixed layer and the magnetization free layer, and the magnetoresistance effect element has a single conductive part with a film area smaller than a film area of the magnetoresistance effect element. The magnetoresistance effect element is configured such that a sense current flows only through the single conductive part.

In a non-limiting example, Figure 1 shows the magnetoresistance effect film 13 having a single conductive part 13A. Further, in another non-limiting example, Figures 4(a) and 4(b) show that the sense current I_p flows only through the single conductive part 13A.

As disclosed in the specification at page 5, lines 19-25, the magnetoresistance effect element is “capable of precisely defining the active region of an MR film” and “effectively suppressing the influence of magnetic film due to current from an electrode.”

Turning to the applied art, Sakakima '618 shows in Figure 1(a) a magnetoresistance effect element having a first magnetic layer 1, a nonmagnetic layer 2, and a second magnetic layer 3. Sakakima '618 states that a conductive portion C is provided “at each of edge portions C', C”, C''' of exposed portions of the nonmagnetic layer 2” to electrically connect

the magnetic layers 1 and 3.¹ Thus, Sakakima '618 has a wider spread of the sense current flowing in the magnetoresistance element than the claimed device, because of the plurality of conductive portions C, and thereby a less MR ratio.

Therefore, Sakakima '618 does not teach or suggest a single conductive part with a film area smaller than a film area of the magnetoresistance effect element and a sense current flowing only through the single conductive part. On the contrary, Sakakima '618 shows in Figure 1(a) a plurality of conductive parts C distributed at C', C'' and C''' edge portions. In addition, Sakakima '618 shows in Figure 5(b) that the magnetoresistance element has a conductive portion C formed in the nonmagnetic layer 2, between the magnetic layers 1 and 3. However, a sense current in Sakakima '618 does not flow only through a single conductive part, as requested in amended Claim 1.

Accordingly, it is respectfully submitted that independent Claim 1 and each of the claims depending therefrom patentably distinguish over Sakakima '618.

Abraham discloses a magnetic tunnel junction device and a current that flows not only through a tunnel region 522, but also through insulating regions 530₁ and 530₂ (see Figure 13c). Therefore, the tunnel region 522 and the insulating regions 530₁ and 530₂ do not have a film surface area smaller than a film area of one of a free layer 524 and a fixed layer 520 as recited in Claim 1. In addition, Abraham does not teach or suggest a single conductive part with a film area smaller than a film area of the magnetoresistance effect element and a sense current flowing only through the single conductive part, as recited in Claim 1.

Accordingly, it is respectfully submitted that independent Claim 1 and each of the claims depending therefrom patentably distinguish over Abraham.

Claims 2-7, 17, 18, and 20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sakakima '121 and Official Notice. That rejection is respectfully traversed.

¹ Sakakima '618, column 5, lines 11-21.

Independent Claims 2 and 5 have been amended to recite similar features as independent Claim 1.

Turning to the applied art, Sakakima '121 shows in Figure 1 a stack of layers including a first magnetic layer 1, a nonmagnetic layer 2, a second magnetic layer 3, and electrodes 11 that have sectional areas smaller than the sectional areas of the layers of the stack. However, Sakakima '121 does not teach or suggest a single conductive part with a film area smaller than a film area of the magnetoresistance effect element and a sense current flowing only through the single conductive part, as recited in Claim 2 and 5.

The outstanding Office Action takes Official Notice at page 5, lines 8-10, that “it was obvious to have electrodes attached to lead portions that have a larger sectional area than the electrodes and/or to have the electrodes connected to shields that also serve as leads.”

Applicants respectfully traverse the ground for rejection relying on Official Notice. Applicants do not consider the feature for which the Official Notice was taken to be “of such notorious character that official notice can be taken.” Therefore, Applicants traverse this assertion. “The examiner should cite a reference in support of his or her position.”²

Accordingly, it is respectfully submitted that independent Claims 2 and 5 and each of the claims depending therefrom patentably distinguish over Sakakima '121.

²MPEP 2144.03, page 2100-129, left column, second full paragraph of MPEP 2144.03.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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